

THE ATOM

Los Alamos Scientific Laboratory

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THE ATOM

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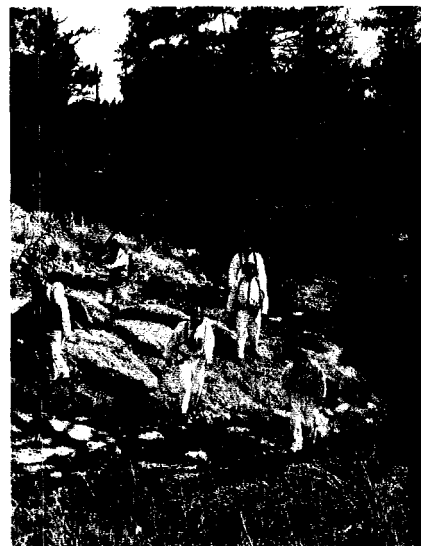
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COVER:

The six men, in seemingly peculiar dress, on the cover of this issue of "The Atom" are students in an intensive respirator training course being offered at the Los Alamos Scientific Laboratory by members of Group H-5. A part of the course is devoted to a rigorous field exercise to give course participants an appreciation for the limitations of respirators and the conditions under which they must be worn.



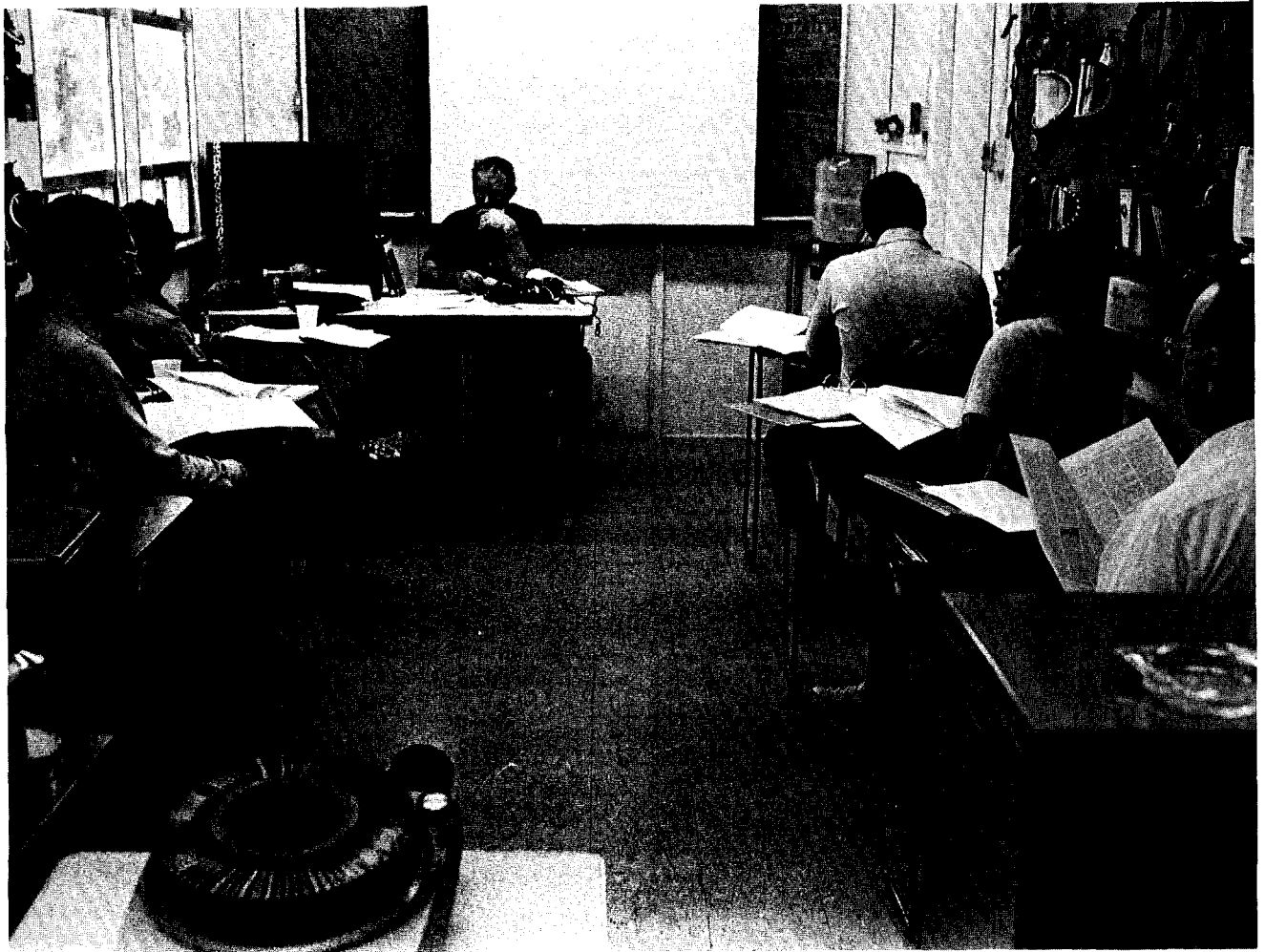
Trainees from U.S. Department of Labor OSHA Offices, who are enrolled in a course offered by Group H-5 at the Los Alamos Scientific Laboratory to clarify supervisory roles in respirator programs, crawl through a culvert while wearing respirators during a field exercise.

Interpreting the Requirements for Respirator Programs

By the end of this year, more than 250 persons from Atomic Energy Commission installations, Department of Health, Education and Welfare, and the Department of Labor will have attended intensive training courses tailored to clarify their roles in the effort to bring respirator programs into compliance with stringent federal regulations.

Funded by the AEC's Division of Operational Safety, and instructed by members of the Los Alamos Scientific Laboratory's Group H-5 Respirator Research and Development Section, the training courses have been underway since April. "We're booked through December," said Section Leader Bruce Held, "and we are accepting applications through June of next year. By the end of December, about 100 people

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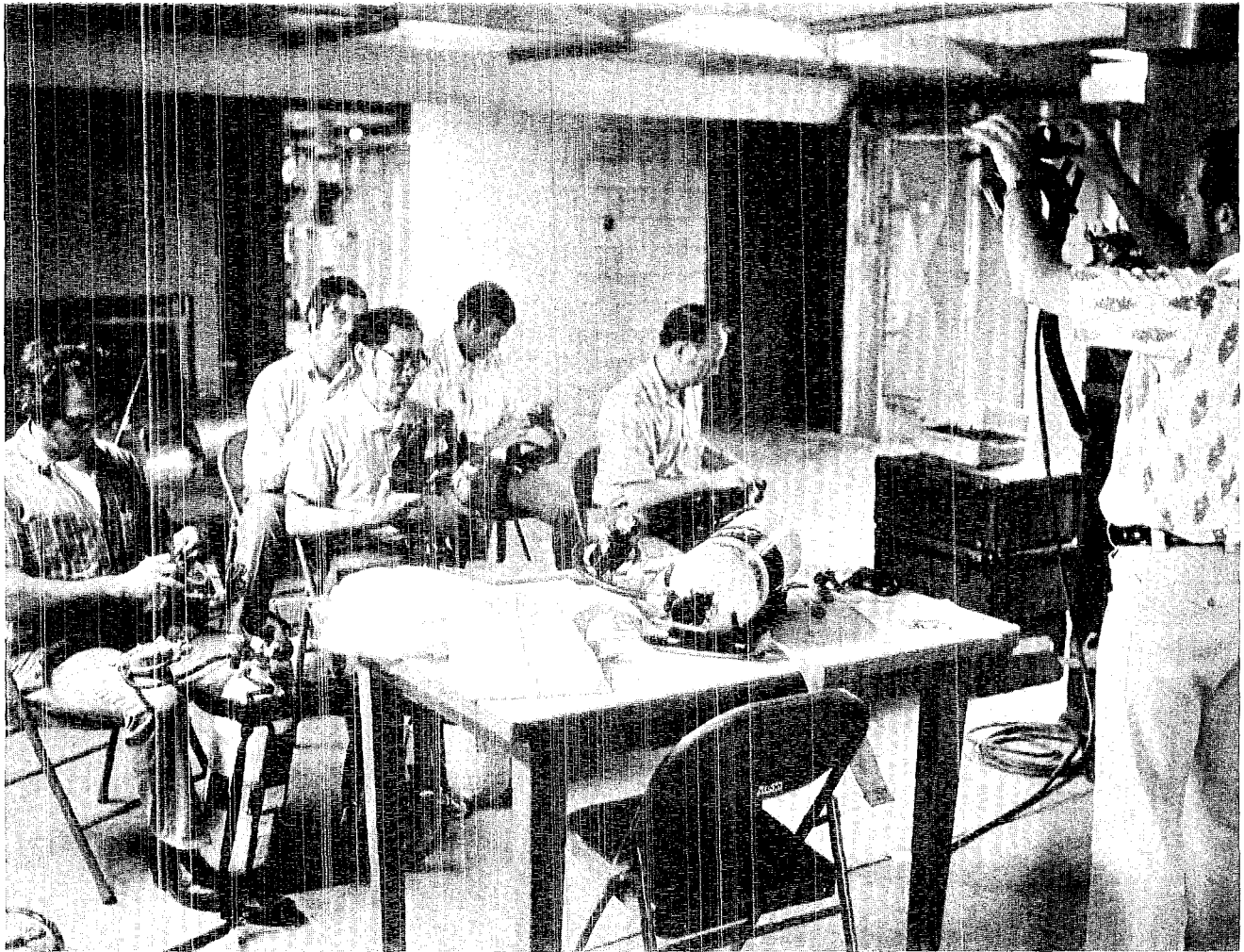
Classroom training and discussions, when respirator courses are offered at the Laboratory, are held in a trailer located behind the Occupational Health Laboratory. Prime instructor is Darell Bevis, facing camera at center.

will have taken the training at the Laboratory and another 150 will have been trained by members of the section at AEC operations and regional offices. We have a trailer set up behind the Occupational Health Laboratory that provides classroom facilities for six persons at a time. On the road, we train as many as 30 persons at a time in facilities provided by our hosts."

John Pritchard, alternate section leader, noted there are several variations of the course being offered, each tailored to the needs of Department of Labor, Department of Health, Education and Welfare, and AEC or its contractor personnel. All variations are structured around respirator regulations contained in the Occupational Safety and Health Act (OSHA), although

contractor personnel taking the course also receive instruction on areas in the respirator field that are peculiar to the nuclear industry and not covered by OSHA. "This additional training," Pritchard said, "is necessary because of the generally more toxic materials encountered in the nuclear industry, requiring more stringent controls on the use of respiratory protection equipment."

OSHA was enacted by Congress "To assure safe and healthful working conditions for working men and women." The Act brought together several existing safety and health standards and made compliance with them mandatory. Included was the Bureau-of-Mines-sponsored Standard, ASNI Z88.2—"Practices for Respiratory Protection," which



was the American National Standard when OSHA was enacted.

"The provisions contained in OSHA," Pritchard said, "are for respiratory protection against non-radioactive materials. Testing and approval of respiratory devices for protection against these materials are included in the responsibilities of the National Institute for Occupational Safety and Health (NIOSH). Although, by executive order, federal agencies are required to abide by OSHA, protective guidelines concerning radioactive materials were left up to the AEC.

"We're doing respirator research and development work for NIOSH, and the section is charged with writing the manuals to provide guidelines for the supervision of adequate respiratory protection

against radioactive materials for the AEC's Division of Operational Safety, for use at contractor installations such as LASL, and for the Directorate of Regulatory Standards, for use in connection with AEC's licensing program for industrial nuclear-power reactors.

"New developments in the respirator field are brought into the training courses as they come about, so the instruction offered is as up-to-date as it can be. The people attending the training courses are not the people who use respiratory devices. Rather, they are AEC supervisory contractor personnel who are in charge of respirator programs at their installations, AEC regulatory compliance personnel who oversee the Commission licen-

Bevis instructs trainees from various U.S. Department of Labor OSHA Offices on proper fitting of a supplied-air respiratory device. Participants are Bud Siroonian, Boston, Mass.; Gary Adams, Charleston, W. Va.; Robert Yamamoto, San Francisco, Calif.; Andrew Lucero, a member of Group H-5 who assisted Bevis; and Ken Clark, Chicago, Ill.

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sees' health and safety programs, and Department of Labor compliance officers who enforce OSHA regulations."

Prime instructor for the course is Darell Bevis, who is assisted by Tom Moore. "What we're doing," said Bevis, "is interpreting the requirements of OSHA and Z88.2 for inspection and supervisory personnel. The course for inspection-type people is two days. It's two and a half days for AEC contractor personnel to enable us to cover matters of concern to people in the nuclear field.

"The course includes classroom training and discussions with visual aids, actual fitting and wearing of various respirator devices and a rigorous field exercise to give people taking the course an appreciation for the limitations of the devices and the conditions under which they must be worn. They wear respiratory devices during a hike over irregular wooded terrain, through tunnels and over or around various other obstacles. They are also issued a manual, which will be updated periodically as new developments in the respiratory field come about."

Members of the H-5 Respirator Research and Development Section accept responsibility for the training program as a tribute to their work in the respirator field. The section is the largest organization of its type in the United States, and it is internationally recognized for its achievements in respirator testing and for innovations in the field. Ever since the 1940's, under the direction of Harry Schulte, H-5 group leader, and Ed Hyatt, who recently retired, the group has pursued an aggressive program of testing respirator devices for facial fit, comfort, breathing ease, filter efficiency, vision and use under a wide range of conditions and temperatures. A commercial respirator is seldom marketed anymore before being tested by the H-5 Respirator Research and Development Section. ✱



Yamamoto experiences breathing conditions in a one-piece, supplied-air suit.



Clark wears the one-piece, supplied-air suit during a walking exercise.

Half a Million People Later

The Bradbury Science Museum marked its 10th anniversary late last month but everybody was much too busy to take time out to celebrate.

After ten years of mushrooming growth, the museum is now averaging 300 visitors per summer day with the record for one day reaching 936. The summer average is 2,000 people per week and 8,000 per month. Registered guests have come from all 50 states and 121 foreign countries and include Nobel laureates, movie stars, senators, congressmen, ambassadors and even a delegation from the People's Republic of China.

"The Crowds are taxing our staff to the limit," said Bob Porton, ISD-2 group leader and museum founder. "Sometimes we have five tours with 25 people each going through at the same time."

To handle the traffic, Porton has a full-time staff of six persons which includes Museum Manager Bob Brashear, Assistant Manager Sam Brock, Carl Cuntz, Mary Sue Wooten, Betty Ekberg and Luz Woodwell; two half-time employees, Evelyn Bartram and Mary Gilmore; and nine casuals, Jo Corrie, Linda Ginsberg, Beatrice Holland, Marvin Luster, Eileen Panowski, Billye Prather, Lee Schachterle, Jo Starling and Janet Susco who work as guides part-time. There is also a full-time summer employee, Marian Fresquez, and a full-time parking lot attendant, Sam Schuster.

"I would estimate, without the slightest fear of contradiction," Por-

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Evelyn Bartram, ISD-2, takes a group on a tour of the Bradbury Science Museum. The Public Relations group moved museum exhibits into present facilities eight years ago.





Ten years ago, Bob Porton and Bob Brashear set up exhibits in LASL's new museum in the AP Building, beside Ashley Pond.

ton says, "that at least a half-million people have been through this museum since it was officially opened in 1963."

And that, Porton says with considerable pride, is a half-million people with a little better understanding of Los Alamos and of science.

"The role of the museum is, first

of all, to tell the story of the Los Alamos Scientific Laboratory to the outside world," Porton said, "to tell what has been done, what is being done and what will be done. We try to bridge the gap between the scientist and the layman—to explain in layman's words what science is doing for the good of mankind."

Porton also feels it is important to tell the taxpayer how his money is being spent for science. Time and time again he has heard visitors express considerable relief about their taxes after a visit to the museum, saying something like: "And I thought all they did was build weapons."

Exhibits cover the gamut of Laboratory activities, past and present, including the wartime history of Los Alamos and the prehistoric era of the Pajarito Plateau.

"We try to keep abreast of the times," Porton said, noting that the museum soon expects to add a laser exhibit, a display to show metric conversion and a model of the assay accountability van that detects radioactive materials at sites throughout the country.

Weapons work is not entirely ignored. The museum became the first place in the world to display ballistic cases for nuclear weapons when cases for Fat Man and Little

Boy, the first atomic weapons, were installed on the museum patio in Oct. 1965. The patio exhibit also includes examples of both fission and fusion weapons of recent vintage, a replica of the Project Rulison device and the Kiwi and Phoebus reactors from the nuclear rocket program.

But the biggest crowd pleasers are those that explain basic science. Among the most popular are Pinocchio, a demonstration of a fission chain reaction using Ping Pong balls, and the Pretty Pinch, representing the controlled thermonuclear reaction program, which bangs out little aluminum bags to demonstrate fast magnetic compression. And everybody likes to try his hand at the manipulators in a simulated hot cell. All three date back to the earliest days of the museum.

The museum began almost by accident in 1958 when Porton, as head of the Laboratory's Community Relations Office, began guiding bus-loads of traveling school groups on sight-seeing tours of Los Alamos. As a conclusion he gathered the groups in a visitors' room in the erstwhile AP Building beside Ashley Pond for a brief talk on Laboratory activities. To make the old room a little more attractive, he put up a few pictures, then a model of the Kiwi train and a facsimile of the Van Allen radiation belts, and soon he had a "display room." Then in 1963, Porton acquired unclassified exhibits from LASL's classified museum and the public museum was made official. By the end of the first year, the museum had already hosted 14,000 people, including the Laboratory's first director, J. Robert Oppenheimer, and had been listed by "Life" magazine as one of the major science exhibits in the United States.

The museum marked its second anniversary by moving into handsome new 8,000 square-foot quarters, adjacent to the Administration Building, on Labor Day, 1965. That same year an advisory board of leading Laboratory staff members was appointed to assist the museum staff

in the preparation of technically correct explanations and logical arrangements of the scientific exhibits. In 1970 it was dedicated to former director Norris Bradbury in recognition of his efforts toward the establishment and expansion of the facility.

One of the museum's significant accomplishments, in Porton's opinion, is that "we've kept thousands of kids out of the technical areas." For years the Public Relations group had been taking school groups on tours of Laboratory facilities as part of its scientific education pro-

gram. "Now we can show them in the museum what they'd see at the sites."

Porton attributes much of the success of the museum to the quality of his guides and especially those who run the museum entirely on their own on weekends. "We've had letters from all over the world commenting on the excellence, knowledgeability and friendliness of our guides," Porton said.

The museum is open from 8 a.m. until noon and 1 to 5 p.m. weekdays, and from 1 to 5 p.m. weekends. ✽

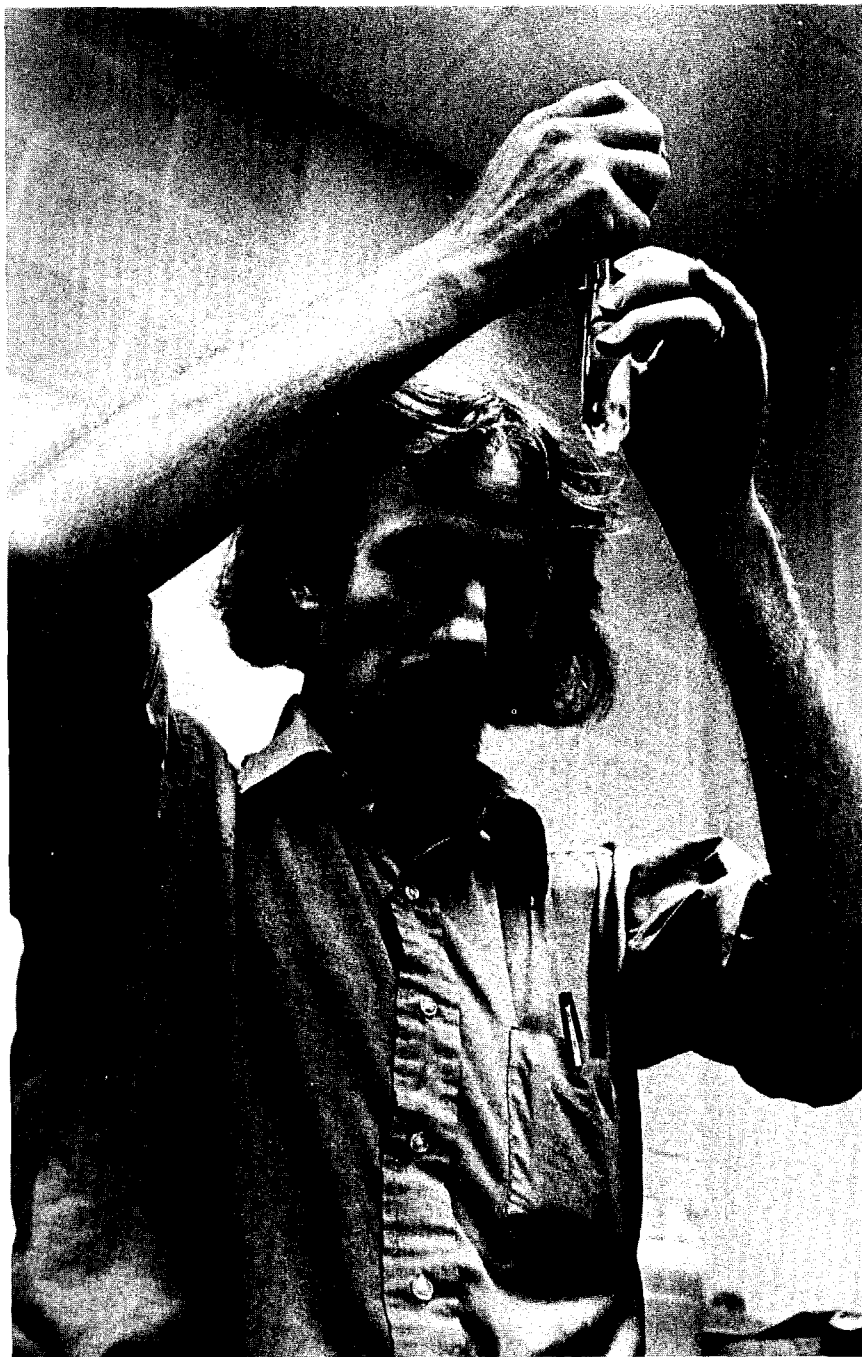
Carl Cuntz, ISD-2, center, and Bob Porton, ISD-2 group leader, right, explain Scyllac exhibit in the Bradbury Science Museum to Frank Oppenheimer, brother of the late J. Robert Oppenheimer, the Laboratory's first director. Frank Oppenheimer, now director of The Palace of Arts and Sciences Exploratorium in San Francisco, Calif., was in Los Alamos as a honored guest at the Second Annual J. Robert Oppenheimer Memorial Lecture.



Cellular Aging Workshop--

Working Toward an Understanding of Why and How We Grow Old

Paul Atkinson, Department of Cell Biology, Albert Einstein College of Medicine, Bronx, N.Y., uses a pipette to extract a sample from a culture tube during the workshop. Atkinson was a member of the teaching staff.

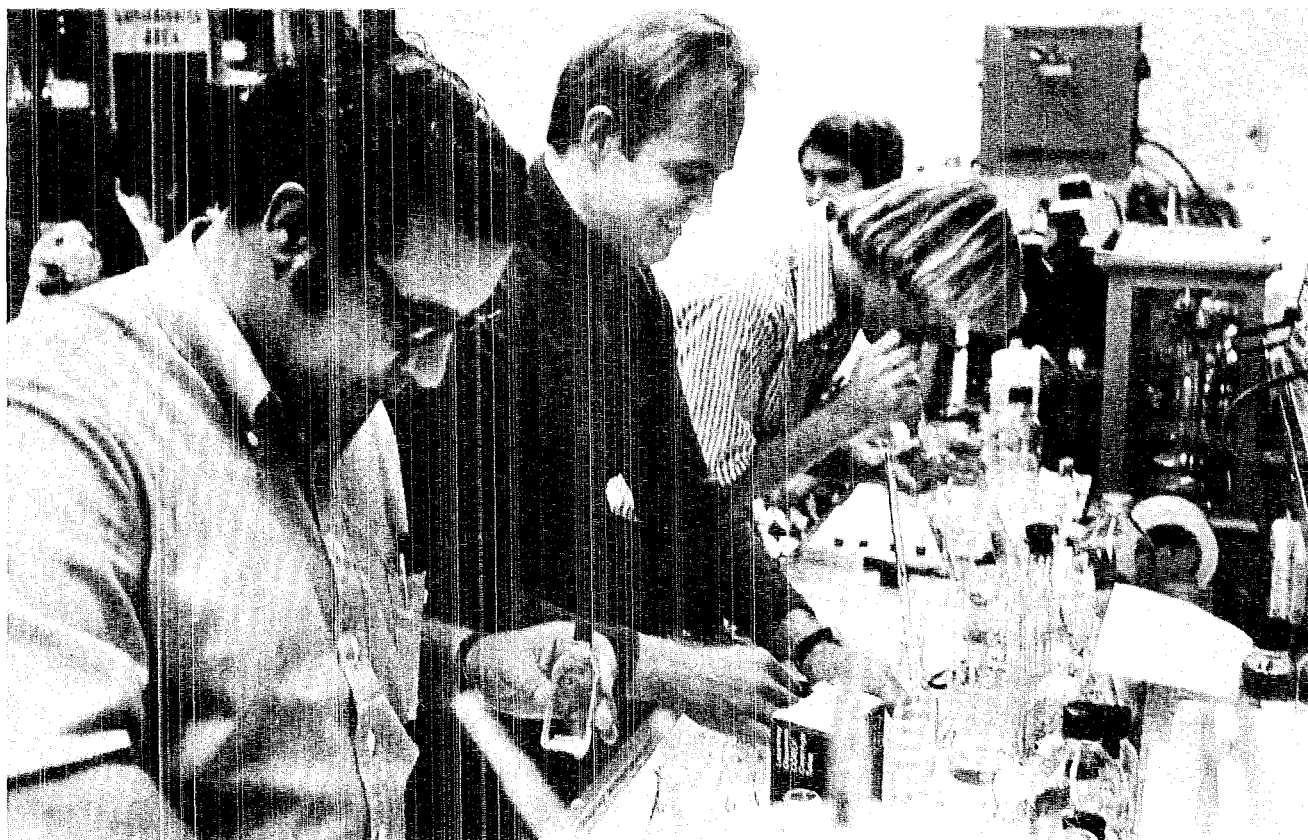


Why and how we grow old is far from being well understood, but the search for answers to these questions is receiving increasing emphasis. One of the ways in which research is being promoted in these areas is by bringing together scientists who are working on the biology of aging, or in related fields, in an environment where they can work together, exchange information and plan collaborative research.

This type of interaction is being sponsored by the National Institute of Child Health and Human Development through its Annual Workshop on Cellular Aging. The Institute's third annual workshop was held recently at the Los Alamos Scientific Laboratory in collaboration with LASL and the Tissue Culture Association. Previous meetings were held at Lake Placid, N.Y., and the University of Vermont, Burlington.

"The workshop was held here under an interagency agreement between the National Institute of Health and the Atomic Energy Commission," said Chet Richmond, alternate H-Division leader and associate director for the workshop. "The meeting was an innovation of tremendous importance to an AEC laboratory like LASL. A lot of people are not aware that the Laboratory is doing work that would be relevant to the interests of any organization other than the AEC. But, LASL is, not only in the field of biology, but in many other fields as well. A workshop, like the one on cellular aging that was just held here, provides visibility for competently staffed programs carried on at the Laboratory that are scientifically sound and extremely relevant to the interests of many other agencies.

"Individuals in our biomedical research programs have had collaborative efforts with people outside LASL before, but the workshop was the first massive exposure of our staff to other top national and international scientists who are working on a related problem.



"The event wasn't just a series of lectures. There were lectures too, given by members of the Laboratory's staff and other key figures in the cellular aging field, who were invited, but the afternoons of the two-week workshop were devoted to five different course centers where participants worked in the laboratory, and some even participated in experiments. Collaborative experiments will grow out of this and some of the work done in the course centers may be submitted for publication.

"This workshop was directed by Don Murphy, a biologist in the Adult Development and Aging Branch of the National Institute of Child Health and Human Development. Don Petersen (H-9 group leader at Los Alamos) was assistant director. Members of the LASI staff set the course up, in conjunction with Murphy, and developed concepts for it. Speakers and participants were selected jointly by a committee made up of representa-

tives from all three organizations involved."

Richmond noted that the 24 participants in the course work were selected from a large list of applicants. Those accepted included scientists with a wide range of disciplines from universities, hospitals, medical institutions and research laboratories.

"This workshop was broader and more encompassing than the two previous workshops," said Richmond. "It included some work on such things as chromosome identification, immunology and cell synchronization. The first two annual workshops were restricted to cell culture—how to grow cells and keep them from getting contaminated. This year's event was really a change. It was something that could be offered here because of the facilities and the broad spectrum of talents we have in our biomedical program at the Laboratory.

"Microscopy and other support

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Working with cultured cells in one of the workshop's five course centers are John Yemma of Youngstown State University, Ohio, and Dayton Misfeldt and Roy Foster, both of the Cancer Research Laboratory, University of California at Berkeley. In right background is Olga Blumenfeld, Department of Biochemistry, Albert Einstein College of Medicine, Bronx, N.Y., who was a member of the workshop teaching staff.



Workshop Director Don Murphy of the Adult Development and Aging Branch of the National Institute of Child Health and Human Development, Bethesda, Md., talks with Roy Foster, Cancer Research Laboratory, University of California at Berkeley.



An informal discussion included Bernardo Nedel-Ginard, Department of Biology at Yale University, New Haven, Conn.; P. C. Huang, Department of Biochemistry, Johns Hopkins University, Baltimore, Md.; Francoise Farron, Cancer Research Institute, New England Deaconess Hospital and Harvard Medical School, Boston, Mass.; Matthews Bradley, Department of Medical Microbiology, Stanford University School of Medicine, Calif.; Mercedes Paz, Orthopedic Research Laboratories, The Children's Hospital Medical Center, Boston, Mass.; Marie Shatos, Department of Biology, The Catholic University of America, Washington, D.C.; and Raju Kucherlapati, Department of Biology, Yale University, who was a member of the workshop staff.

instrumentation were readily available, and the participants were also introduced to cell sensing and cell sorting equipment for which the Laboratory is at the leading edge of research and development in the country.

"We think the participants and visiting lecturers were pleased with the workshop. Many of them expressed an interest in attending LASL's First Annual Life Sciences Symposium beginning October 17. It will be two and a half days on 'Mammalian Cells: Probes and Problems,' an area in which the biomedical staff at LASL is well recognized both nationally and internationally. Participants for the symposium will be invited and will probably number about 100, or

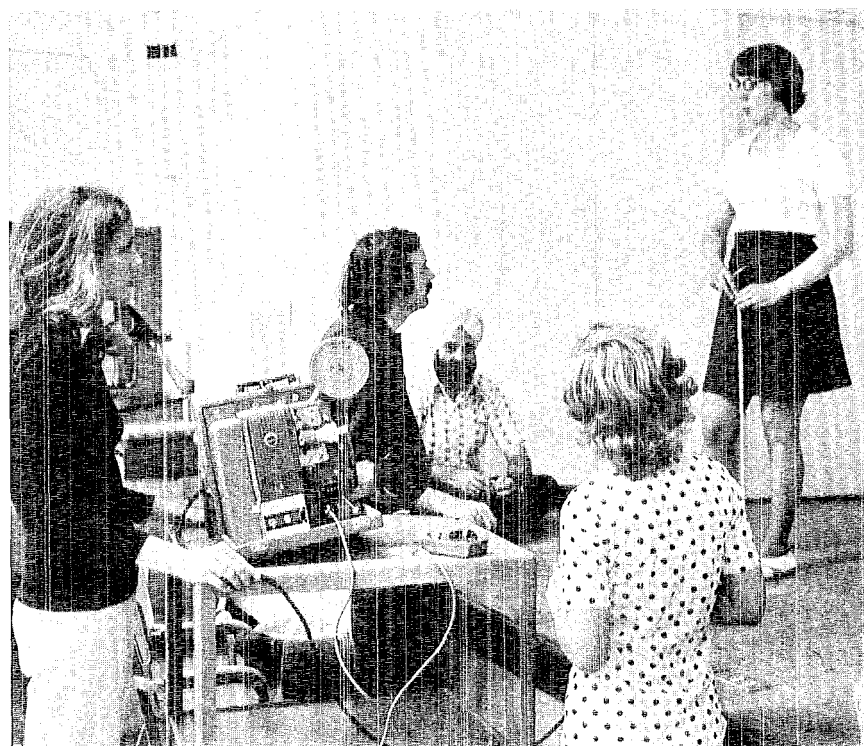
about all that Los Alamos housing, and present Laboratory facilities and staff can handle.

"The biomedical groups at LASL have the capabilities for cell culture and biology from the cellular and molecular level through tissue, organ and whole body. Cellular and molecular biology at the Laboratory are only about 10 years old. Somewhere around 1962, we started getting away from strongly mission-oriented programs and into more general research in the cell-biology field, and it has matured very rapidly."

The biomedical research program at the Laboratory is funded primarily by the AEC's Division of Biology and Environmental Research and leans heavily toward



Discussing course center work in the Health Research Laboratory's seminar room are Sandra Barnard, a member of the workshop staff from Baltimore City Hospitals, Md.; Daniel Wallace, Department of Pathology, University of Southern California, Los Angeles; Inder Jit Singh, Institute for Dental Research, New York University Dental Center; Marlene Absher, a member of the staff from the University of Vermont College of Medicine's Department of Medical Microbiology, Burlington; and Bina Oppenheim, Department of Biochemistry, Albert Einstein College of Medicine, Bronx, N.Y.



Don Petersen, H-9 group leader at the Los Alamos Scientific Laboratory, talks with workshop participants Inder Jit Singh of the Institute of Dental Research, New York University Dental Center, and Daniel Wallace, Department of Pathology, University of Southern California, Los Angeles.

studies of the effects of ionizing radiation on living systems. Molecular and cellular level research is centered in Group H-9 with the support of Group H-10 whose members develop and apply electronic and optical methods for sensing and sorting cells.

According to Paul Kraemer of H-9: "None of us are working on programs specifically labeled 'aging' or 'cancer' or anything else, but the life sciences are so interwoven that cell biology in general has relevance to these programs and hundreds of others. We are concerned with effects of radiation on living systems. Many people believe that one of the effects of radiation is that it mimicks or produces symptoms similar to the natural aging process. When you look at abnormalities in cells you look at it with respect to how it is different from normal cells. So we have to try to understand the mechanics of normal cells too, and aging is just one of their characteristics."

Ron Walters, also a member of H-9, added that a part of the group's work has to do with enumerating events and timing of events in the cell cycle to learn what a cell must do to pass on necessary characteristics to its daughters and to determine what prevents these events from occurring normally.

Another project being carried on in H-9, by Bob Tobey, is the screening of drugs suggested for cancer therapy by testing their effects on cells. This work is being done through a grant from the National Cancer Institute.

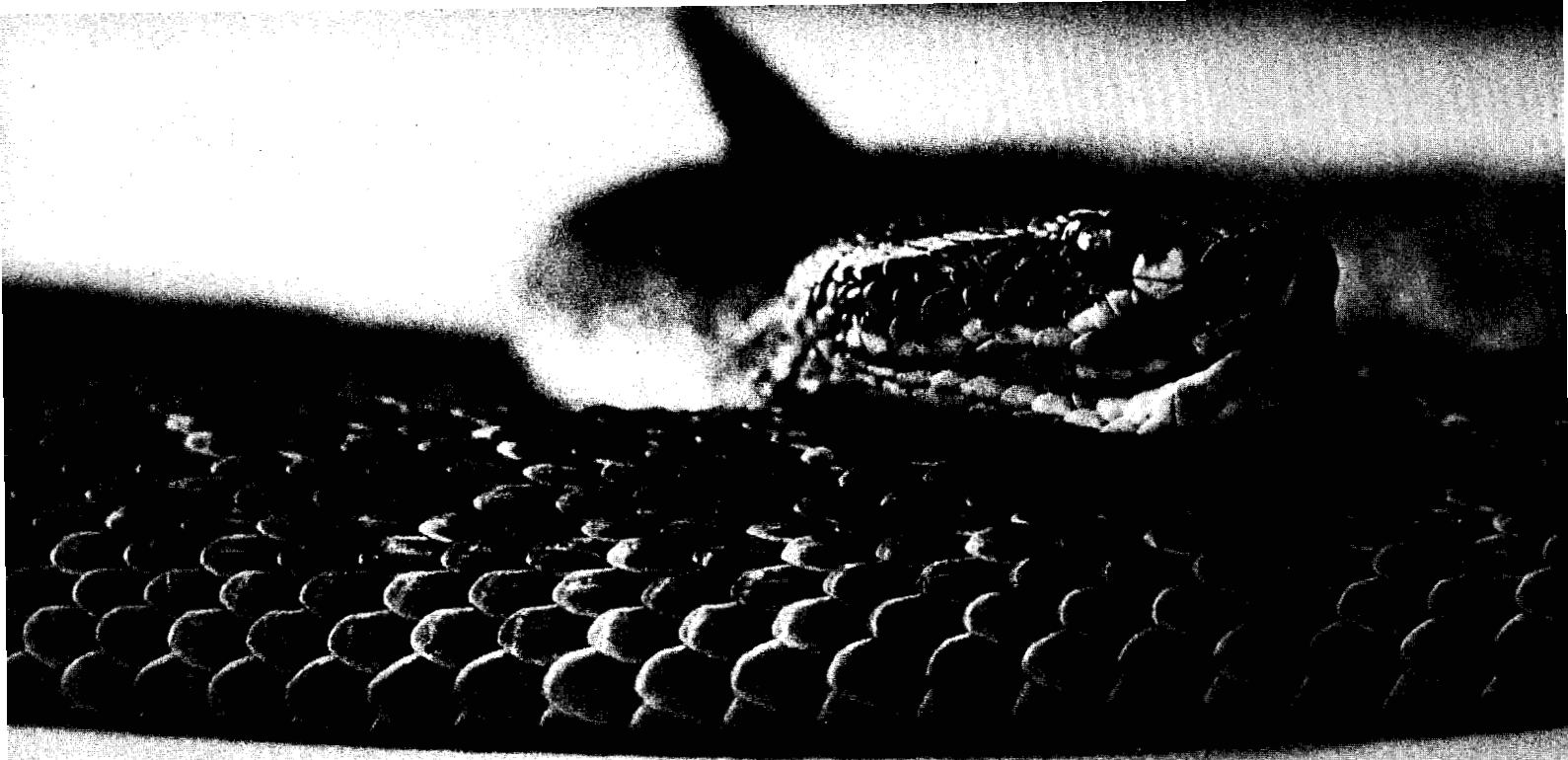


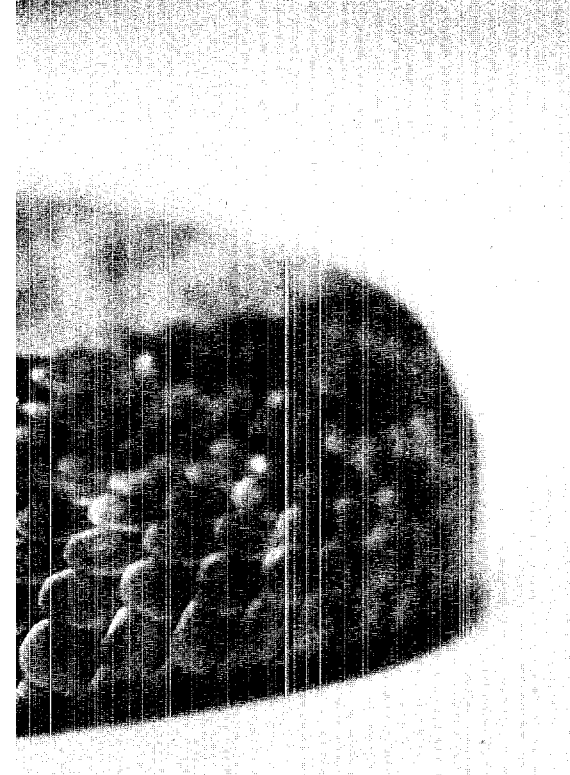
Photo Shorts

By Bill Jack Rodgers and Winfred Headdy

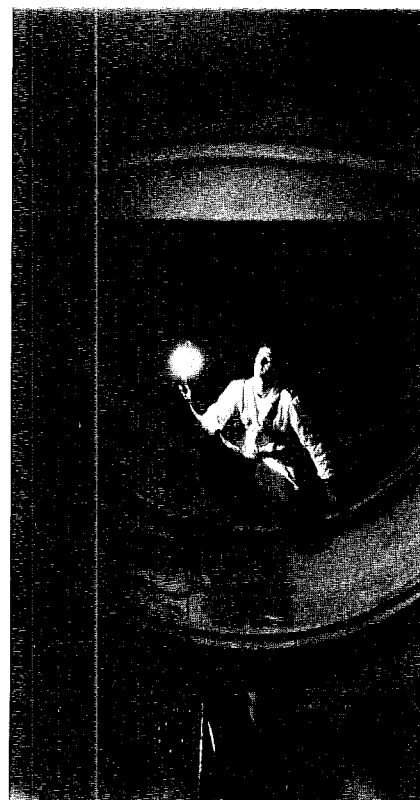
This rattlesnake tried to join members of SD-5's Branch Shop 33 for mid-morning coffee at TA-35, but it received an unfriendly welcome. According to Ken Schowalter, shop foreman, the snake apparently entered the building through an equipment room door and then went down a corridor which runs between the shop's door and offices in the building. Alex Ortiz, A-1, discovered the rattler in the corridor in front of the machine shop's double doors. He entered the room through another door and warned SD-5 members against entering the corridor. While John Shook, SD-5, looked for something with which to kill the rattler, the snake crawled under the door. Shook killed it with a metal rod about 30 inches long. The rattler measured 27½ inches.



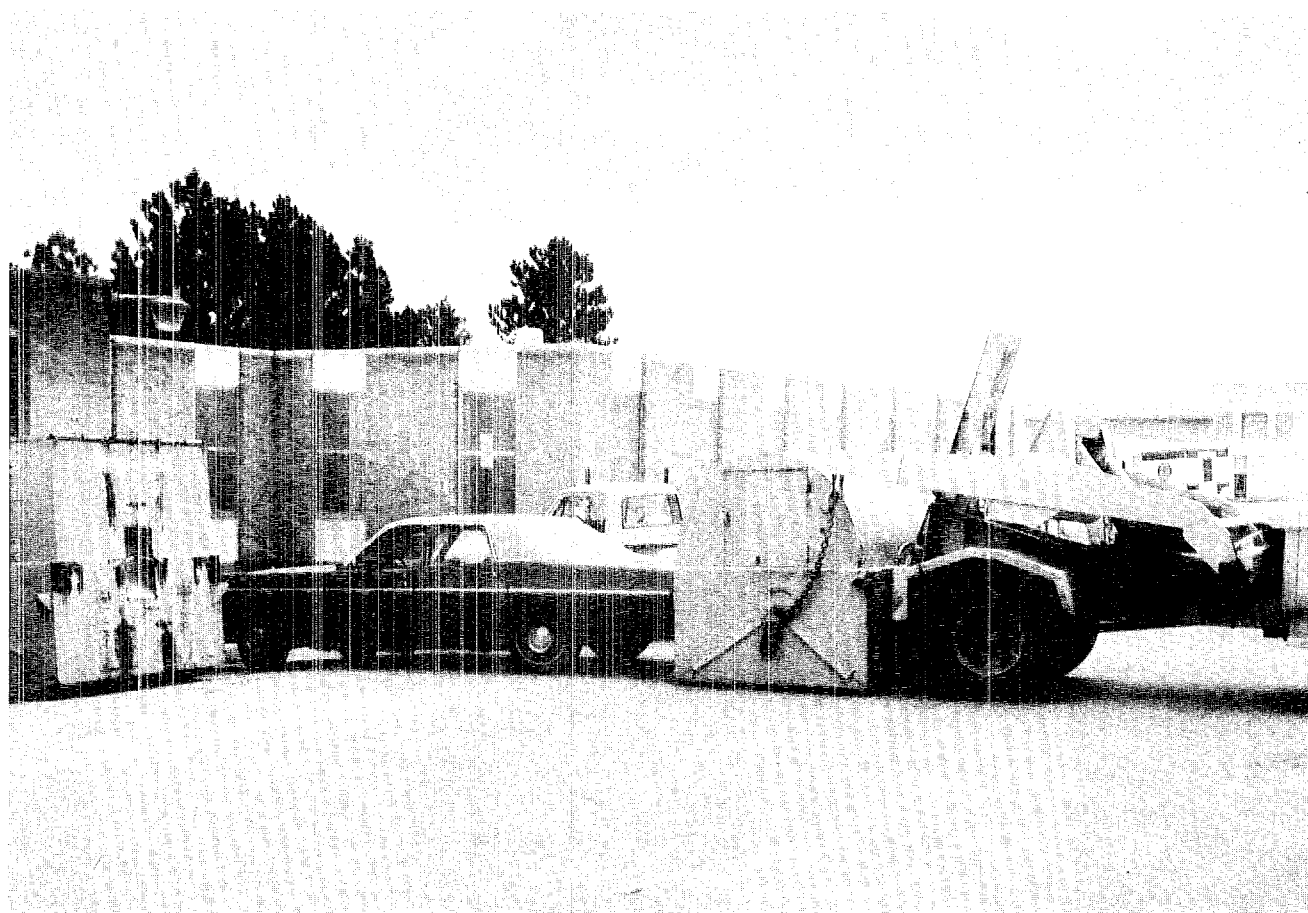
William Ellis, Q-3, right, answers a question about controlled thermonuclear reaction research at the Los Alamos Scientific Laboratory for Nancy Petrowski, National Science Fair winner of the Air Force Award for Environmental Science. She was accompanied to Los Alamos by Lieutenant Ronald Kroop, left, of the Air Force Weapons Laboratory, Kirtland Air Force Base. In background is Q-3 Group Leader George Sawyer.



Wilbur Sickles, CNC-4, makes an internal inspection of a liquid nitrogen dewar at TA-46 which will be used in conjunction with the Los Alamos Scientific Laboratory's stable isotopes production facilities. Water, on the floor of the dewar, thought to be caused by condensation, was removed.



What to do? During the short time it took to empty a dumpster, a car was parked in the dumpster's place.



"Absolutely superb!"

That's just one of the enthusiastic comments used by Don Liebenberg, L-DOT, to describe his flight across Africa aboard the French Concorde supersonic-transport prototype June 30 in the path of the 20th century's 50th total solar eclipse. The flight was part of a world-wide scientific venture that included one of the Los Alamos Scientific Laboratory's three observation posts in its sixth eclipse expedition.

Racing at nearly 1,300 miles per hour at altitudes between 50,000 and 58,000 feet, the Con-

corde gave Liebenberg and other scientists from the United Kingdom and France man's longest look at the solar eclipse, amounting to 74 minutes of totality. Previously, the longest scientific view had been 9 minutes, 42 seconds from an aircraft.

"At our altitude the sky was extremely dark, and the corona, even though it was a dim one, stood out with tremendous intensity," Liebenberg said. "The changes appeared to be in relief, just like a cameo. It looked as though we could reach out and grab it."

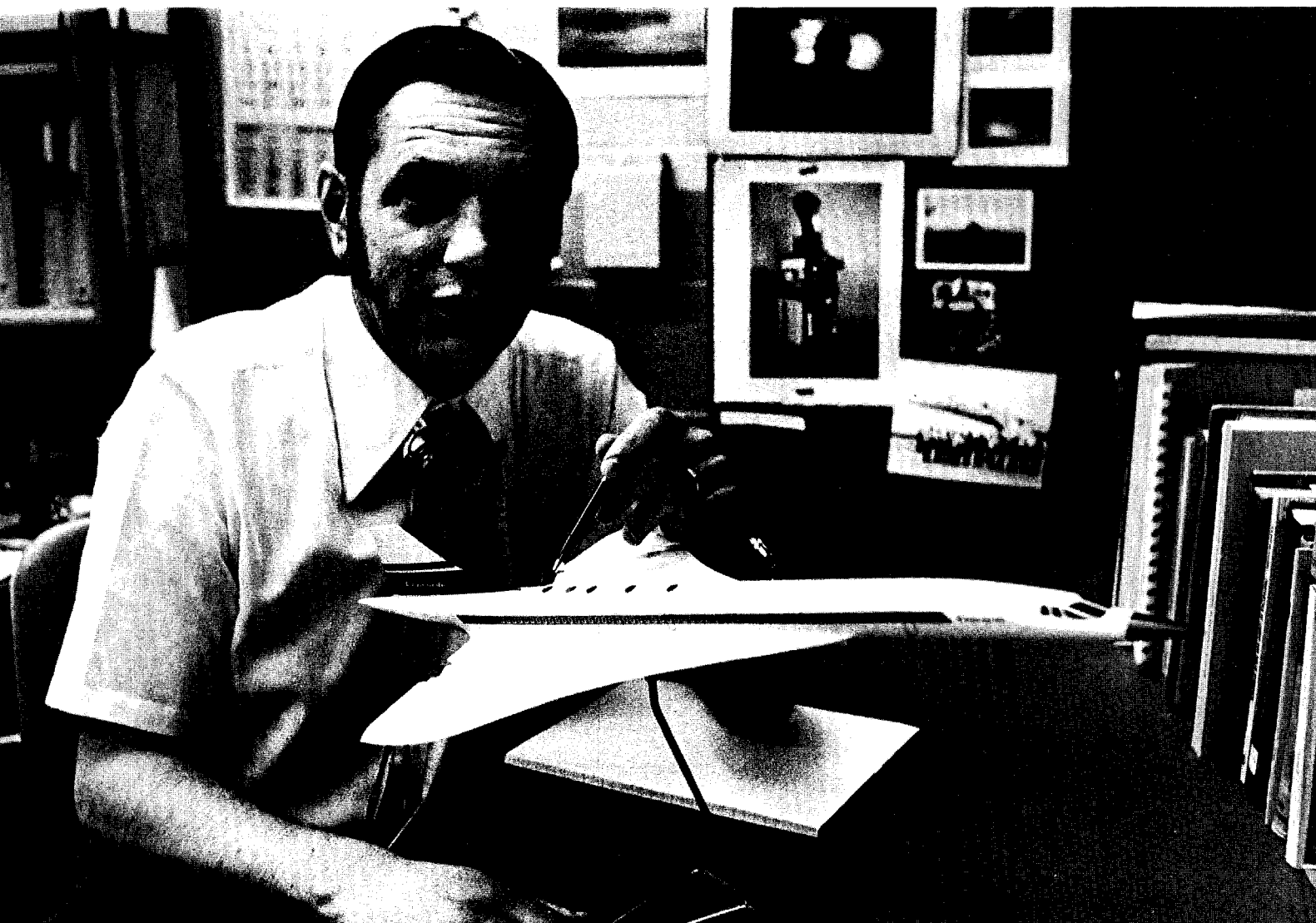
As totality ended, he said, he could watch the

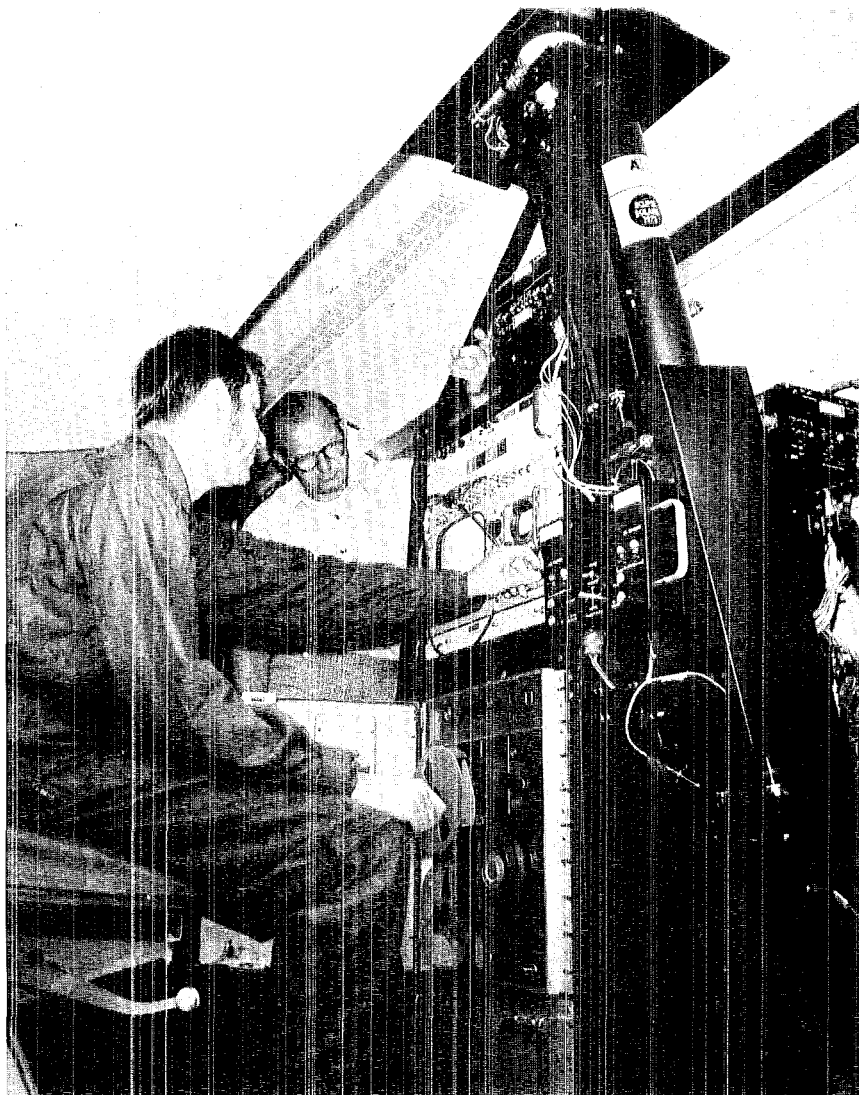
LASL's Don Liebenberg Experienced

By Barbara Storms

74 Minutes of Totality Aboard a French Concorde

Don Liebenberg, L-DOT, indicates the approximate location of his experiment aboard the Concorde supersonic-transport prototype used in the recent scientific eclipse expedition.





Liebenberg and Bob Lang, E-5, check out the LASL solar eclipse experiment aboard the Concorde. A special fused silica window was installed in the roof of the aircraft to provide a long, undistorted view of the eclipse in totality. (Photo by British Aircraft Corporation).

red crescent of the sun's atmosphere slowly emerge from behind the blue-white corona. "It was magnificent," Liebenberg explained that the red glow is created by the excitation of the hydrogen in the chromosphere which is the area between the surface of the sun and the corona.

Below, he saw the shadow of totality displayed on the fiercely blowing sands of the Sahara Desert. "From one side of the plane the shadow was dark," he said, "but from the other side, because we were not in the exact center of the narrow eclipse path, the shadow glowed brilliant red like a rising sun, turning bluer and brighter toward the far edge."

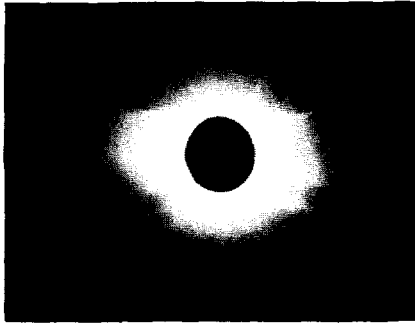
When the sun was out, as it was during the practice flights, the sky was purple and the curvature of the earth was clearly visible, Liebenberg said. "It was just like space; in fact, at that altitude we were in space by Air Force definition."

The huge jet responded like a fighter plane in the capable hands of its chief test pilot, Andre Turcat, Liebenberg said. "There was ample evidence that he knew exactly what he was doing."

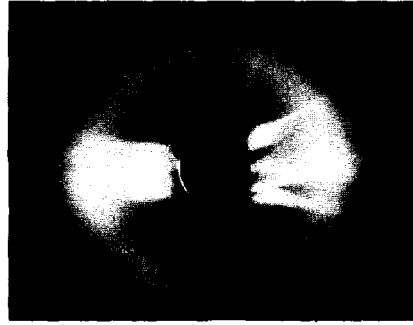
A flight plan, enabling the Concorde to intercept the elliptically shaped cone of the eclipse shadow at a precise point in space, was drawn up by J-15 using a unique LASL-developed computer code, modified to include wind and temperature data collected in the upper atmosphere and stratosphere on Concorde practice flights. The slightest heading error at the beginning could have ruined the plan, Liebenberg said, "but Turcat understood his plane's flying characteristics so well that he arrived at the intercept point within one second of the designated time. He was truly remarkable."

The Concorde took off from Las Palmas in the Canary Islands, raced 1,800 miles across Africa,

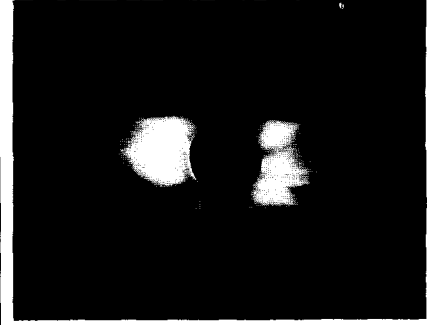
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An experiment by Sid Stone, J-10, Bill Regan, ISD-1, and Darrell Call, E-5, used two identical motor-driven cameras equipped with 500mm lenses. One of the camera lenses was equipped with a radially-graded, neutral-density filter. This photograph was taken through the non-filtered camera lens. Streamers of the far-out corona are recorded in detail, but structure of the inner corona is lost through extreme overexposure. When the film exposure is reduced sufficiently to retain detail in the inner corona, the outer corona is too dim to be recorded.



With the camera equipped with the radially-graded, neutral-density filter, aboard the NC-135, Stone, Regan and Call recorded, with a single exposure, this detailed photograph showing the extreme range of brightness from the sun's inner corona to the very faint, far-out coronal streamers extending more than three-million miles into space. The maximum-density spot in the center of the filter approximates the size of the moon as seen through the 500mm telephoto lens. The density of the filter rapidly decreases symmetrically outward from the center of the filter to reach maximum transparency at about four solar radii. The bright annular ring at this distance is believed to be caused by internal light scattering, and possibly by a mismatch of the filter density variation and the actual coronal brightness structure.



This composite photograph of the eclipsed sun's corona, was made by Frank Berry, ISD-7, from two negatives, one that was exposed for one second through the radially-graded, neutral-density filter, and another that was exposed for half a second through the non-radially filtered lens. By combining the two negatives for this print, the annular ring, noted in center photo cutline, was suppressed, although much of the fine detail is cut out, and the length of the streamers is reduced. Berry provided technical photo support for all experimenters while at Torrejon Air Force Base near Madrid and has supervised sensitometry and the carefully controlled processing and handling of data film.

and intercepted the moon's shadow over Mauritania. After the eclipse the plane landed for refueling at Fort Lamy, Chad, in central Africa.

Liebenberg's experiments, which he conducted in collaboration with Marvin Hoffman, J-12, who flew in the AEC/Air Force NC-135 aircraft for the solar expedition, were aimed at gathering a range of information about the temperatures and excitation conditions in the transition region between the sun's chromosphere, the inner portion of the solar atmosphere, and the corona, the outer part of the sun's atmosphere.

"This region is believed to be very narrow—only about 1,000 kilometers deep," Liebenberg explained, "and has never been resolved in previous observations."

The Liebenberg-Hoffman experiments were designed to support each other and take full advantage of the various characteristics of both aircraft.

On the NC-135, flying more than 550 miles per hour at about 38,000 feet, 50 miles north of the supersonic jet, Hoffman used a 10-inch aperture telescope with fast instrumentation to look at red, green and possible yellow emission lines in the corona, and to measure their polarization during the 12 minutes and six seconds of totality available on the subsonic NC-135. Using a three-inch aperture telescope on the Concorde, Liebenberg looked at temporal variations of the green emission lines and at the details of changes as the corona merges with the chromosphere.

Because the Concorde was flying at very nearly the speed of the moon's shadow, Liebenberg was able to see all aspects of the onset and departure of totality in very slow motion. At that speed, the moon worked like a slow shutter, slicing off only a tiny 20-kilometer portion of the sun's atmosphere every second to provide remarkable resolu-

Art Cox, right, J-15, scientific coordinator for LASL's airborne solar-eclipse expedition, briefed Madrid Observatory's Director, Jose Pensado Iglesias, center, and Deputy Director Manuel Lopez Arroyo on a tour of the AEC/Air Force NC-135 flying laboratory. Lopez Arroyo flew with the NC-135 group as a guest observer during the eclipse mission.



Jacques Beckers, left, Sacramento Peak Observatory, and Liebenberg, right, observe the performance of the tracking unit for the "Rube Goldberg" coronal emission-line telescope which is operated by Mort Sanders, J-12, on an NC-135 practice flight from Albuquerque. During the actual eclipse mission, this experiment was coordinated with a similar one manned by Liebenberg, who was the sole United States scientist on the history-making eclipse flight of the supersonic French Concorde.



tion. By comparison, Liebenberg pointed out, between 200 and 300 kilometers would whiz by in one second for ground observers. "Therefore, we had 50 seconds to observe the 1,000-kilometer region compared with only three seconds, had we been on the ground."

The Concorde's unique capabilities also provided Liebenberg with the opportunity to look for possible pulsations in the solar corona which have never before been seen. These pulsations were expected to have a period of about five minutes, Liebenberg said. "This meant that we had time to see about 12 of them from the Concorde when only two could be seen from the NC-135 and barely one from the ground. We hope we have been able to exploit these differences to the fullest and come up with definitive data on this problem."

Both experiments incorporated telescopes from which the light was recollimated to pass through a series of filters and spectral analyzers. It was refocused on the image plane of an intensifier and then on a television camera. The signal is recorded on magnetic tape.

Although the data is not yet analyzed, Liebenberg feels confident of excellent results. "We must have gotten a million dollars worth of good from that flight."

Results of the experiments will be directly applicable to plasma physics, Liebenberg said, hopefully providing more understanding of the means by which the solar corona heats up from a temperature of a few thousand Kelvins to millions of

continued on next page

Kelvins. Liebenberg also hopes to learn more about solar winds which originate in the corona as a result of this remarkable overheating process.

A veteran of eight previous solar eclipse expeditions since 1954, Liebenberg was invited in January to join six other observers on the flight by the French General Delegation for Scientific and Technical Research.

"Few labs could have responded on such short notice with equipment and staff as LASL did," Liebenberg said.

Drawing on concepts developed on previous airborne solar expeditions, Liebenberg and Hoffman began immediately to design their apparatus. "Bob Lang of E-5 was responsible for the detailed mechanical design," Liebenberg said. "He somehow managed to finish the designs, run them through the shops and have the assembled apparatus ready to ship to France for the practice flights by early April. That was a truly fine achievement."

Hoffman was responsible for designing a video system similar to that used on the NC-135, but modified to meet the weight and space requirements of the Concorde. A new sun-tracking system, designed by Ed Brown, E-5, "proved to be an interesting concept using logarithmic amplifiers that could not have been exploited if we hadn't needed something for the Concorde flight," Liebenberg said.

"However," he emphasized, "We could never have flown on the Concorde had we not acquired all that valuable experience on LASL's previous airborne eclipse expeditions."

In addition to the LASL experiment, the Concorde carried two experiments from France—one to make observations of the dust corona region in which the solar corona is embedded and another that looked for motions in the corona over a long period of time by observing electron scattering. The British studied variations in intensity of photospheric radiation and the response of the earth's atmosphere to changing solar light as the eclipse began and ended.

In addition to Liebenberg's experiments, the LASL expedition (SEX VI) included nine experiments carried on the NC-135, which have been used in eclipse expeditions since 1965. Leon Radziemski, CMB-1, was based as an observer aboard the cruise liner, "Canberra," cruising off the west coast of Africa. Funded by the AEC and the National Science Foundation, the LASL experiments were conducted in collaboration with

Sandia Laboratories, Sacramento Peak Observatory, Lawrence Livermore Laboratory, the Air Force Aerospace Research Laboratories, the University of California at Los Angeles, and the Arcetri Astrophysical Observatory in Florence, Italy. Art Cox, J-15 group leader, was coordinator for the expedition.

The eclipse, with a duration of totality equal to the second longest in more than 14 centuries, attracted thousands of observers from all over the world to prime viewing locations along the 161-mile path. But, Liebenberg thinks LASL's airborne positions were by far the best. "If a man traveled to thirty eclipses over the past 50 years he would have seen 129 minutes of totality," he said. "We saw more than half of that in just one trip." ☸

Leon Radziemski, CMB-1, LASL's man at sea during the June 30 total solar eclipse, assembles his equipment aboard the cruise ship Canberra. Successful observations of the corona in the near infrared area of the solar spectrum were recorded with this cannon-like telescope. (Photo by Clarice Cox).



short subjects

A new program, which will make available a limited number of special research appointments for outstanding, recent recipients of postdoctoral degrees, will be established at the Los Alamos Scientific Laboratory next year.

The primary objective of the appointments, to be known as J. Robert Oppenheimer Research Fellowships in honor of the Laboratory's first director, "... is to increase and deepen contacts between the Laboratory and that select number of recent recipients of doctoral degrees who show clear and definite promise of becoming outstanding leaders in scientific research," stated Director **Harold Agnew** at the time he announced that the program would be established effective July 1, 1974.

Applications received for appointments as J. Robert Oppenheimer Fellows will be distributed by the Personnel Department to appropriate divisions. Proposals must be sponsored by a Laboratory division and then considered by the Postdoctoral Committee. Appointments will be made by the Laboratory director acting on recommendations of the Postdoctoral Committee.

The fellowships are for a term of one or two years, with the possibility of renewal for a third year.



John Spalding, H-4 group leader, has been appointed a member of the Committee on Space Research (COSPAR) Panel on Radiation Biology.

COSPAR was established by the International Council of Scientific Unions. It is "an interdisciplinary scientific organization concerned with the progress on an international scale of all kinds of fundamental research carried out with the use of rockets or rocket propelled vehicles."



As a part of its Youth Opportunity Campaign, LASL has employed, for the summer, more than 100 young persons from economically disadvantaged families in northern New Mexico.

John Pritchard, H-5, has been appointed by New Mexico Governor Bruce King to serve on the eight-member New Mexico Railroad Authority. The appointment was effective July 1 for a term of three years.

The Authority, and its Colorado counterpart, is responsible for supervision of the lease with Scenic Railways, Inc., which operates the narrow-gauge Cumbres and Toltec Scenic Railroad between Chama, N.M., and Antonito, Colo.



Benjamin Williams, ENG-3, died recently. He is survived by his wife, Opal, and two children, Paul of Dallas, Texas, and Linda McCracken, Burlington, Ontario, Canada.

Robert PerLee, associate ISD-7 group leader, died recently. He is survived by his wife, Virginia, and two daughters, Polly and Patricia PerLee, both of Denver, Colo. PerLee had been employed at the Laboratory since 1950.

Dennis Alarid, SP-3, died recently. Alarid is survived by two children, Denise and Dennis. Alarid had been employed by the Laboratory since 1969.

VosBert Peters, who retired from the Shop Department in 1972, died recently. He had been a resident of Tucson, Ariz., since his retirement. He is survived by his wife, Frances, and three daughters, Patricia, Gail and Pamela.



Fremont Carroll, ENG-2, has retired after 18 years of Laboratory service. He and his wife, Carmell, plan to remain in Los Alamos.

Earl Ross, ENG-2, a Laboratory employee since 1961, has retired. He and his wife, Dorothy, will continue to live in Santa Fe.

Robert Van Lyssel, M-4, retired recently. He had been employed by the Laboratory since 1946. He and his wife, Billie Jo, E-2, will continue to make their home in Los Alamos.

Adam Schuch, Q-26, retired in July. He had been employed by the Laboratory since 1949. Schuch and his wife, Gretchen, a former ISD-4 employee, will continue to reside in Los Alamos.

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Gerold Tenney, consultant for the Los Alamos Scientific Laboratory, has been elected a Fellow of the American Society for Nondestructive Testing.

A Fellow of the Society "is a member who is of unusual professional distinction and who has made continued significant contributions to the advancement of nondestructive testing and evaluation or planning."



Posey Keaton, Jr., an employee at the Los Alamos Scientific Laboratory since 1965, has been named E-Division leader effective Aug. 8.



Keaton, appointed by Laboratory Director **Harold Agnew**, will succeed **Thomas Gardiner** who has been acting division leader.

The new division leader joined the Laboratory in 1965 as an accelerator physicist. His work since that time has been primarily in conjunction with the Laboratory's research efforts connected with the Tandem Van de

Graaff accelerator.

Keaton attended Emory and Henry College in Emory, Va., where he received his B.S. in mathematics and physics in 1957. He received the Ph.D. in physics from Johns Hopkins University in 1963.



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Bob Newman, an employee at the Los Alamos Scientific Laboratory from 1948 until July of this year, has been appointed deputy assistant manager for operations for the Atomic Energy Commission's Nevada Operations Office.

Newman will aid the assistant manager for operations in developing plans and policies, operational, safety and security controls, and special projects for the nation's nuclear weapons program.

While employed at the Laboratory, Newman participated in all of the test series at the Nevada Test Site. He also participated in all but two of the atmospheric test series in the Pacific.

He was assigned to provide advice to the manager of the Nevada Operations Office on containment matters in 1971. After completing this assignment he returned to J-DO where he remained until joining the AEC in July.



During the 1972-73 academic year, 14 University of New Mexico degrees were granted through the Los Alamos Graduate Center. According to **Ted Dunn**, assistant personnel director at the Los Alamos Scientific Laboratory, 12 of the degrees went to LASL employees. The other two degrees were granted to a member of the military, who is assigned at the Laboratory, and a local resident.

Dunn reported that either all or a significant share of the course work was completed through the Los Alamos Graduate Center. The Recipients are **Lavon Biswell**, MP-1, M.S. in electrical engineering; **George Brothbeck**, TD-5, M.A. in mathematics; **Billy Buzbee**, C-4, Ph.D. in mathematics; **James Clark**, T-6, Ph.D. in mathematics; **William Huntman, Jr.**, C-2, M.S. in electrical engineering; **William Johnson**, military staff member in WX-6, M.S. in physics; **Robert Mitchell**, T-6, M.S. in electrical engineering; **John Phillips**, CMB-1, M.S. and Ph.D. in chemistry; **Barbara Pollock**, WX-7, B.S. in mathematics; **David Schultz**, C-2, M.S. in electrical engineering; **James Shipley, Jr.**, E-4, Ph.D. in electrical engineering; **Gerald Swanson**, CMB-1, M.S. in chemistry; and **Judith Wagner**, a Los Alamos resident, M.S. in chemistry.

the technical side

Taken from Technical Information Release Forms submitted to ISD-6

Lecture series, University of Uppsala, Sweden, and National Institute of Defense, Stockholm, Sweden, March 21-May 21:

"Survey of Numerical Methods Used in Neutron Transport Theory" by B. G. Carlson, T-1

Symposium on New Developments in Radiopharmaceuticals and Labeled Compounds, Copenhagen, Denmark, March 26-30:

"Evaluation of Diabetes by Oxidation of ^{14}C - or ^{13}C -Labeled Glucose to CO_2 in Vivo" by W. W. Shreeve, C. H. Wu and M. S. Roginsky, all Brookhaven National Laboratory, Upton, N.Y., J. D. Shoop and R. P. Eaton, both University of New Mexico School of Medicine, Albuquerque, D. G. Ott and C. T. Gregg, both H-11, and R. Uphoff, H-2

Technical University, Zurich, Switzerland, April 30; University of Munich, Germany, May 2; University of Erlangen, Germany, May 3; University of Cologne, Germany, May 4; University of Birmingham, England, May 9; and University of Oxford, England, May 11:

"Lamb-Shift Polarized Sources at Los Alamos and Parity Violation Experiment" by J. L. McKibben, P-9

Naval Weapons Center, China Lake, Calif., May 9-10:

"Thermally Stable Explosives" by R. N. Rogers, WX-2

University of Oslo and Norsk Hydro Institute for Cancer Research, Oslo, Norway, June 1:

"Techniques of Rapid, Single-Cell-Analysis and Its Application to DNA Measurement, Quantitative Immunofluorescence, and Tumor Cell Identification" by L. S. Cram, H-10 (invited)

Symposium on Rapid Methods and

Automation in Microbiology, Stockholm, Sweden, June 3-8:

"Application of Flow Microfluorometry (FMF) and Cell Sorting Techniques to the Control of Animal Diseases" by L. S. Cram, J. C. Forslund, P. K. Horan and J. A. Steinkamp, all H-10

Seventh International Conference on Nondestructive Testing, Warsaw, Poland, June 4-8:

"The SNT-TC-1A Recommended Practice for NDT Personnel Qualification and Certification in the American Nuclear Power Plant Industry" by G. H. Tenney, LASL consultant

American Federation of Information Processing Societies' National Computer Conference, New York, N.Y., June 5-7:

"Graphics and Engineering—Computer Generated Color Sound Movies" by L. H. Baker, TD-7, and E. K. Tucker, ENG-7 (invited)

"One and One-half Precision for Optimum Core Utilization" by W. E. Wageman, CNC-4

Fourth Annual Symposium on Experimental Space Science, York University, Toronto, Canada, June 5-8:

"Proposed Magnetospheric Injection Experiments" by H. M. Peek, J-10 (invited)

Stanford University, Calif., June 7:

"Preparation for Pion Radiotherapy at LASL" by C. Richman, H-10 (invited)

American Nuclear Society's 19th Annual Meeting, Chicago, Ill., June 10-15:

"An Automated Method for Calculating Energy Deposition in CTR Materials" by L. D. Rigdon, Naval Weapons Evaluation Facility, Kirtland Air Force Base, Albuquerque, H. A. Sandmeier, TD-6, and G. E. Hansen, P-5

"The conversion of Para- to Ortho-Hydrogen in a Radiation Field" by J. W. Conant, WX-2, F. J. Edeskuty, Q-26, J. E. Huston, Gulf General Atomic, La Jolla, Calif., and F. V. Thome, Sandia Laboratories, Albuquerque

"Effect of Space Dependent Fission Matrices in Transport Calculations" by T. R. Hill and K. D. Lathrop, both T-1, and G. E. Hansen, P-5

"Analysis of ZPPR/FTR-2 Neutron Reaction Rates Using ENDF/B-III Data" by D. W. Muir and R. J. LaBauve, both T-2, and R. E. Alcouffe, T-1

"Characterization of Uncertainties in Evaluated Cross Section Sets" by D. R. Harris, P. G. Young and G. M. Hale, all T-2

"Experimental Criticality Safety at Los Alamos" by H. C. Paxton, P-5

"Prompt Neutrons Emitted in Spontaneous Fission of ^{257}Fm " by L. R. Veaser and A. Hemmendinger, both P-3, J. B. Wilhelmy, D. C. Hoffman, G. P. Ford and J. P. Balagna, all CNC-11, and J. A. Farrell, P-11

"Nuclear Applications of Lasers" by R. S. Cooper, L-DO, and J. H. Williams, L-5 (invited)

"Gamma-Ray Measurements for Nuclear Material Accountability" by T. D. Reilly and J. L. Parker, both A-1 (invited)

"Fissionable Material Assay Using Muonic X Rays" by J. J. Malanify, C. J. Umbarger, D. A. Close, R. H. Augustson and L. V. East, all A-1

"Criticality Problems and Solutions in Nuclear Safeguards" by D. B. Smith and J. E. Foley, both A-1 (invited)

"An Overview of Image Processing" by D. H. Janney, M-2

"Efficient Representation of ENDF/B Angular Distributions in Multigroup Processing Codes" by P. D. Soran, and C. R. Weisbin, both T-2

"MINX-A Multigroup Interpretation of Nuclear X-Sections" by C. R. Weisbin, P. D. Soran, D. R. Harris and R. J. LaBauve, all T-2, and J. S. Henricks, Massachusetts Institute of Technology, Cambridge (invited)

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"Exact Doppler Broadening of Evaluated Neutron Cross Sections" by D. E. Cullen, Lawrence Livermore Laboratory, Calif., O. Ozer, Brookhaven National Laboratory, Upton, N.Y., and C. R. Weisbin, T-2

Conference on Environmental Impact of Aerospace Operations in the High Atmosphere, Denver, Colo., June 11-12:

"Distributions and Associations of some of the Chemical Elements Found in the Stratosphere" by W. A. Sedlacek and P. R. Guthals, both CNC-11

Twenty-Eighth Annual Symposium on Molecular Structure and Spectroscopy, Ohio State University, Columbus, June 11-15:

"Low-Lying States of Ne_2 and Ne_2^+ " by J. S. Cohen, TD-8, and B. I. Schneider, T-6

"A New Look at Hexafluoride Force Fields" by R. S. McDowell and L. B. Asprey, both CNC-4

Soreq Nuclear Research Centre, Yavne, Israel, June 12; and Ionized Gas Laboratory, Euratom-Italian Nuclear Energy Commission, Frascati, Rome, Italy, June 25:

"Physics of Laser Fusion Targets" by R. S. Cooper, L-DO

Twentieth Annual Meeting of the Society of Nuclear Medicine, Miami Beach, Fla., June 12-15:

"Investigations of the Preparation of Strontium-82, Iodine-123, Xenon-127, and Cesium-129 at LAMPF from Spallation Reactions in Lanthanum and Molybdenum" by H. A. O'Brien, Jr., and A. E. Ogard, both CNC-11

Eighth International Conference on Low Energy Ion Accelerators and Mass Separators, Billingham, Skövde, Sweden, June 12-15:

"Expectations and Problems of an On-Line Mass Separator Project on a High Intensity Accelerator (LAMPF)" by B. J. Dropesky and B. R. Erdal, both CNC-11

"Developments in Areas of On-Line Fission-Yield and Direct Mass Measurements at the Los Alamos Scientific Laboratory" by S. J. Balestrini, CNC-11, and L. Forman, J-16

Subcommittee on Water and Power Resources of Committee on Interior and Insular Affairs, United States Senate, Washington, D.C., June 13:

"The Potential for the Production of Power from Geothermal Resources" by M. C. Smith, Q-22

Seminar, Max Planck Institute for Biophysical Chemistry, Goettingen, Germany, June 13:

"Techniques of Rapid Single-Cell Analysis and Its Application to DNA Measurements, Quantitative Immunofluorescence, and Tumor Cell Identification" by L. S. Cram, H-10 (invited)

Twenty-Eighth Annual Calorimetry Conference and Fourth Annual North American Thermal Analysis Society Meeting, College of the Holy Cross, Worcester, Mass., June 13-15:

"The Enthalpy of Formation of Hafnium Dioxide" by A. N. Kornilov, and I. M. Ushakova, both Moscow State University, USSR, E. J. Huber, Jr., and C. E. Holley, Jr., both CNC-2

Federal Institute of Reactor Material Research, Wurenlingen, Switzerland, June 14:

"Recent Neutron Diffraction Research on Heavy Rare Earth Silver Compounds" by N. G. Nereson, P-2

United States Atomic Energy Commission's Fourth Workshop on Personnel Neutron Dosimetry, Miami Beach, Fla., June 14-15:

"Neutron Dosimetry Studies at LASL" by D. E. Hankins, H-1

Physics Seminar, Northwestern University, Evanston, Ill., June 15:

"Transport Equation with Multiple Scattering" by B. R. Wienke, T-1

Bell Laboratories, Murray Hill, N.J., June 15:

"A Survey of Methods for the Direct Solution of the Discrete Poisson Equation" by F. W. Dorr, C-4 (invited)

Stockholm International Peace Research Institute Symposium on "Review of Nuclear Proliferation Problems," Tallberg, Sweden, June 15-18:

"Nuclear Weapons Technology"
by J. C. Hopkins, J-DO

1973 American Association of Cost Engineers Annual Meeting, St. Louis, Mo., June 16-20:

"A Computerized Estimating Package" by H. D. Orr, ENG-8, and R. A. Stutz, TD-3

Health Physics Society Annual Meeting, Miami Beach, Fla., June 17-21:

"Estimating the Plutonium Content of the Human Skeletal System from Measured Concentrations in Bone Samples" by L. J. Johnson, H-8, J. F. McInroy, E. E. Campbell and W. D. Moss, all H-5

"Plutonium Glovebox Shielding" by R. G. Stafford and J. R. Cortez, both H-1

"A Study of the Plutonium Concentration in Human Tissue Collected from Three Population Areas in the United States" by W. D. Moss, E. E. Campbell and J. F. McInroy, all H-5 (invited)

"Performance of Multiple High Efficiency Filters Against Plutonium Oxide Aerosols" by M. Gonzales, J. Elder and H. Ettinger, all H-5

"Plutonium Aerosol Size Characteristics" by J. C. Elder, M. Gonzales and H. J. Ettinger, all H-5

"A Small, Inexpensive Albedo-Neutron Dosimeter" by D. E. Hankins, H-1

"The Applicability of the Honeybee as an Indicator of Environmental Radiocontamination" by T. E. Hakonson, L. J. Johnson and W. D. Purtymun, all H-8

National University for Space and Aeronautics, Toulouse, France, June 18:

"The Solar Corona-Physics and Observations" by D. H. Liebenberg, L-DOT

Canadian Association of Physicists Meeting, Montreal, June 18-21:

"Non-Conserved Boson Currents with DKP Fields" by E. Fischbach, Purdue University, Lafayette, Ind., M. M. Nieto, T-5, and C. K. Scott, McMaster University, Hamilton, Ontario, Canada

Society for Industrial and Applied Mathematics 1973 National Meeting, Hampton, Va., June 18-21:

"The Direct Solution of the Discrete Biharmonic Equation" by B. L. Buzbee and F. W. Dorr, both C-4

"On the Use of Fast Poisson Solvers to Implement Two A-Stable Marching Procedures for Parabolic Problems" by B. L. Buzbee, C-4

"A Numerical Method for Determining Critical Parameters for Bodies of Arbitrary Shape" by C. A. Anderson, WX-3, and O. C. Zienkiewicz, University of Wales, Swansea, United Kingdom

Fifth International Conference on High-Energy Physics and Nuclear Structure, Uppsala, Sweden, June 18-22:

"Search for a Parity-Violating Contribution to Nucleon-Nucleon Scattering" by D. E. Nagle, MP-DO, C. F. Hwang, MP-7, N. Jarmie, P. A. Lovoi and G. G. Ohlsen, all P-DOR, J. L. McKibben, P-9, R. E. Mischke and J. M. Potter, both MP-4, R. R. Stevens, Jr., MP-9, P. Debrunner, D. Fritts, H. Frauenfelder and L. Sorensen, all University of Illinois, Urbana

"Status of LAMPF Experimental Facilities" by H. A. Thiessen, MP-7

"Atomic Capture of Negative Mesons" by M. Leon, MP-3, and R. Seki, California State University, Northridge

"Naive View of High Energy Hadron-Nucleus Collisions" by A. S. Goldhaber, MP-DO (invited)

"Effect of Nuclear Deformation on High Energy Elastic Hadron Nucleus Scattering" by A. S. Goldhaber, MP-DO, and A. W. Chao, Institute for Theoretical Physics, State University of New York, Stony Brook

"Some Problems with the Pion-Nucleus Potential" by A. S. Goldhaber, MP-DO

"Threshold Dependence of Moment of Inertia on Nuclear Quadrupole Moment" by A. S. Goldhaber, MP-DO

"Off-Shell Proton-Proton Cross Sections Appropriate to (p, 2p) Reactions" by E. F. Redish, University of Maryland, College Park, and G. J. Stephenson, Jr., T-5

American Crystallographic Association Meeting, Storrs, Conn., June 18-22:

"Electron Population Analysis Applied to Diamond" by A. C. Larson and D. T. Cromer, both CMB-5, and R. R. Ryan, Jr., CNC-4

Chapman Memorial Symposium on Magnetospheric Motions, Boulder, Colo., June 18-22:

"Effect of Sharp Southward Turnings of Interplanetary Magnetic Field on the Plasma Sheet at 17-18 R_E " by A. T. Lui and D. Venkatesan, both University of Calgary, Alberta, Canada, E. W. Hones, Jr., P-4, and S. I. Akasofu, Geophysical Institute, College, Alaska

"Plasma Flow in the Plasma Sheet and Its Relation to Substorms" by E. W. Hones, Jr., P-4

Institute of Nuclear Materials Management's 14th Annual Meeting, San Diego, Calif., June 20-22:

"Measurements of UF_6 Cylinders with Portable Instruments" by R. B. Walton, T. D. Reilly, J. L. Parker and J. H. Menzel, all A-1, E. D. Marshall and L. W. Fields, both Oak Ridge Operations, Tenn.

Institute of Electrical and Electronic Engineers International Symposium on Electromagnetic Compatibility, New York, N.Y., June 20-22:

"New Methods of EED RF Testing" by R. M. Joppa, M-6, and R. W. Freyman, E-DOR

American Astronomical Society's 140th Meeting, Ohio State University, Columbus, June 24-28:

Possible Detection of Prompt Gamma Rays from Supernovae" by I. B. Strong, R. W. Klebesadel and R. A. Olson, all P-4

"Observations of Gamma-Ray Bursts of Cosmic Origin" by R. W. Klebesadel, I. B. Strong and R. A. Olson, all P-4

"Multiple-Shock Production in Supernovae Explosions" by L. W. Fullerton, C-4, I. B. Strong and R. W. Klebesadel, both P-4

"The Effects of Molecules on the Rosseland Mean Opacity of Stellar Mixtures" by A. L. Merts and N. H. Magee, Jr., both T-4

10



years ago in los alamos

Culled from the September, 1963, files of the
LASL NEWS and the Los Alamos Monitor by Robert Porton

Security Fence Goes

The Physics Building will come out from behind the security fence on or about Sept. 16, although the west wing of the structure will remain a security area. The present gate at the intersection near the cafeteria will be removed, and Pajarito Road, in front of the Shops Department, will become an open thoroughfare.

Private Development Proposals

Proposals for private development of the Pajarito Acres Subdivision and for additional housing at White Rock have been invited by the AEC. Land in both areas is offered for \$25 an acre. It may be purchased in amounts up to 100 acres at White Rock and in unspecified amounts at Pajarito Acres. White Rock lots are to be "of suburban size." At Pajarito Acres, developers must agree to supply buildable lots of three to five acre size.

Family Days Big Success at NRDS

More than 4,000 persons toured the Nuclear Rocket Development Station at Jackass Flats, Nev., on Family Days. It was the first opportunity for most of the nearly 1,000 NRDS employees to show their families where they work. Virtually all facilities were open at the sprawling desert site 90 miles north of Las Vegas. LASL and other contractors are working there on Project Rover, the joint AEC-NASA program for developing nuclear-propelled rockets.

Food Prices

The following items and prices were featured at a Los Alamos supermarket: Leg-o-Lamb, 65 cents a pound; Fryers, 35 cents a pound; Lettuce, two heads for 29 cents; Apples, 10 cents a pound; Coffee, 69 cents a pound.

New Fast Reactor Going Up

Construction has begun at Ten Site on LASL's new Fast Reactor Core Test Facility, a \$7 million project expected to be completed in 1967. FRCTF will make possible the testing of molten plutonium reactor fuels at high specific power levels. Designed to achieve a higher fuel burnup capability, the reactor is hoped to realize a specific power level of more than 300 watts per gram of plutonium.

what's doing

BIEN DICHO TOASTMASTERS CLUB: Luncheon meeting, at noon every Monday (meeting place varies). For information call James Baran, 662-3977.

SIERRA CLUB: Meets second Monday of each month, 7:30 p.m., Graves Hall, United Church. For information call Betsy Barnett, 662-9581.

RIO GRANDE RIVER RUNNERS: Meetings scheduled for noon, second Friday of each month at South Mesa Cafeteria. For information call Jan Cross, 662-9462.

LOS ALAMOS SAILORS: Meetings at noon, South Mesa Cafeteria, first Friday of each month. For information, call Dick Young, 983-9770.

SPORTS CAR CLUB DEL VALLE RIO GRANDE: Meetings, 7:30 p.m., Hospitality Room, Los Alamos National Bank, first Tuesday of each month. For information call Wayne Fullerton, 662-4171.

PUBLIC SWIMMING: High School Pool. Monday through Wednesday, 7:30 to 9 p.m.; Saturday and Sunday, 1 to 6 p.m.; Adult Swim Club, 7 to 9 p.m., Sunday.

MOUNTAIN MIXERS SQUARE DANCING CLUB: Pinon School, 8 p.m. For information call Barry Lenhart, 672-9798.

Sept. 15—Jack Thompson, Tulia, Texas.
Sept. 29—District Dance, Fred Staeben, Palmer Lake, Colo.

Oct. 6—Bill Wright, Farmington

NEWCOMERS CLUB: For information call Pat Astle, 662-4709

Sept. 26—Cake decorating demonstration, Los Alamos National Bank, 7:30 p.m.

MESA PUBLIC LIBRARY:

Aug. 31-Oct 1—Thayer Carter, woodcuts
Sept. 6-Oct. 1—Library display, "Banned Books."

WHITE ROCK KARATE CLUB: Workouts, 8 p.m., Monday and Wednesday, Pinon Elementary School gym. For information call Tom Cook, 672-9426

LOS ALAMOS BADMINTON CLUB: Tuesday, 8 to 9:30 p.m., Girls' gym, High School. For information call Art or Jane Sherwood, 662-2966.

LOS ALAMOS VOLLEYBALL CLUB: Every Monday, Girls' gym, High School, Men—6-7:30 p.m., Women—8-9:30 p.m. For information call Gary Wall, 662-4601.

OUTDOOR ASSOCIATION: No charge, open to the public. Contact leaders for information.

Sept. 1-3—Conejos Peak Country, Colo., Dave Blevins, 662-7458.

Sept. 15-16—Wheeler Peak, Bob Godwin, 672-3493

Sept. 29-30—Horsethief Meadows, Don Hoard, 672-3356

Oct. 5-9—The Maze in Canyonlands, Utah (limited to 25), Wally Green, 672-3203

NATIONAL ORGANIZATION FOR WOMEN: Sept. 11, 8 p.m., Zia Room, Fuller Lodge. For information call Susan Lilley, 672-9539.



U.S. Senator John Pastore of Rhode Island, center, discusses Los Alamos Scientific Laboratory programs with LASL's director, Harold Agnew, left. Accompanying Pastore, who is the senior senate member on the Joint Committee on Atomic Energy, was George Murphy, right, deputy director of the Committee staff.

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New Mexico's U.S. Senator Joseph Montoya visited the Los Alamos Scientific Laboratory recently for briefings on technical programs and to deliver a talk at a special colloquium. The title of his talk was "Changing Congressional Attitudes Toward Traditional AEC and Scientific Programs: 'Is the Honeymoon Over?'" Shown, during the briefings, are Richard Taschek, LASL's associate director for research; Senator Montoya; Bob Masterson, alternate head of the Laboratory's Information Services Department; LASL Director Harold Agnew; and Deputy Director Raemer Schreiber.

